

INTISARI

Obesitas merupakan salah satu permasalahan yang serius di bidang kesehatan secara global. Tanaman menjadi perhatian sebagai alternatif untuk pengembangan obat antiobesitas yang efektif dan aman. *Hibiscus sabdariffa* L. (Rosela) merupakan salah satu tanaman yang banyak dikembangkan sebagai antiobesitas. Flavonoid adalah salah satu kandungan bunga Rosela yang berperan terhadap aktivitas antiobesitas. Jaringan adiposa banyak terdistribusi di bawah kulit. Penelitian ini bertujuan untuk membuat sediaan matriks *patch* ekstrak etanol bunga Rosela yang optimal, mengetahui transpor flavonoid total sediaan melewati kulit tikus dan mengetahui aktivitas sediaan matriks *patch* ekstrak bunga Rosela terhadap sel pre adiposa 3T3-L1.

Bunga Rosela kering dimaserasi dengan etanol 70% sehingga diperoleh ekstrak kental. Ekstrak kental tersebut diuji karakteristiknya meliputi organoleptis, pH, susut pengeringan dan viskositas. Pada penelitian ini dilakukan pembuatan formulasi matriks *patch* dengan kombinasi polimer HPMC dan CMC-Na. Kombinasi polimer penyusun matriks HPMC dan CMC-Na ditentukan dengan bantuan *software Design Expert 7*. Pengujian karakter fisikokimia *patch* dilakukan dengan mengevaluasi kesan visual, bobot matriks, tebal matriks, % susut pengeringan, *folding endurance*, dan kandungan flavonoid total. Uji transpor formula optimal matriks *patch* ekstrak Rosela dilakukan menggunakan sel difusi vertikal dan membran kulit tikus selama 24 jam. Sampling cairan aseptor akan digunakan untuk mengukur aktivitasnya terhadap sel pre adiposa 3T3-L1.

Formula optimal kombinasi polimer HPMC dan CMC-Na (2,844:1,656) menghasilkan matriks *patch* dengan bobot matriks sebesar 0,229 gram, ketebalan sebesar 0,666 mm dan % susut pengeringan sebesar 22,011 %. Analisis secara spektrofotometri UV-VIS terhadap hasil uji transpor *in vitro* formula optimal matriks *patch* menunjukkan bahwa flavonoid total belum dapat berdifusi melewati kulit karena absorbansi berada di bawah nilai LOQ. Sehingga perlu dilakukan perbaikan metode analisis yang lebih sensitif dan selektif. Namun, hasil uji transpor sediaan matriks *patch* menunjukkan adanya kematian sel pre-adiposa 3T3-L1 dengan persen kematian tertinggi sebesar 44,103%. Hal ini kemungkinan disebabkan flavonoid total ada yang tertranspor namun tidak terdeteksi dengan metode yang digunakan. Selain itu keberadaan senyawa lain dari ekstrak bunga Rosela selain flavonoid yang dapat tertranspor pada cairan aseptor uji transpor kemungkinan turut berperan dalam menyebabkan kematian sel pre adiposa 3T3-L1.

Kata kunci : *Hibiscus sabdariffa* L., matriks *patch*, 3T3-L1

ABSTRACT

Obesity is one of serious health problems globally because it may increase the risk of metabolic disorder. Plants are getting major attention as an alternative to develop antiobesity drug with less side effects. *Hibiscus sabdariffa* L. (Rosella) has activity as antiobesity. Rosella flowers are commonly used as beverage for diet. Flavonoid as one of component in Rosella flower has role as antiobesity. Adipose tissue is mostly distributed in subcutan. The purposes of this research are 1) to optimize combination ratio of polymer matrix that contains extract etanol of Rosella, 2) to observe their *in vitro* transport of matrix through rat skin membrane and 3) to determine the activity of matrix patch on preadipose cell 3T3-L1.

Dry Rosella flower was macerated by using ethanol 70%. Extract Rosella flower would be evaluated its organoleptic, moisture content, pH and viscosity. Matrix patch formulation is composed of HPMC and CMC-Na as combination polymers and propyleneglycol as enhancer. Combination ratio HPMC and CMC-Na was determined by using Design Expert 7. Physicochemical characteristics of matrix would evaluate matrix's visual, weight, thickness, moisture content, folding endurance and drug content. They would be used to determine optimum formula. Transport study was carry out on optimal formula using Franz diffusion cell and rat skin membrane for 24 hours. Aceptor fluid from transport study would be used to measure mortality percent of pre adipose cell 3T3-L1.

Combination proportion of 2,844 HPMC and 1,656 CMC-Na as optimum formula gave value of weight, thickness and moisture content around 0,229 gram; 0,666 mm; and 22,011% respectively. Transport study *in vitro* showed that total flavonoid could not be transported across rat skin because it was below LOQ value with UV-Vis spectrophotometry method. More sensitive and selective of analytical method was needed to analyse total flavonoid. But aceptor fluid from transport study had activity on pre adipose cell 3T3-L1 with mortality percent around 44,103%. It could possibly happen because total flavonoid was able to diffuse through skin but it can not be analyzed with spectrophotometry method. Besides that, other compounds of Rosella extract besides flavonoid that could diffuse through membrane, had activity on pre adipose cell 3T3-L1 death.

Keywords : *Hibiscus sabdariffa* L, matrix patch, 3T3-L1